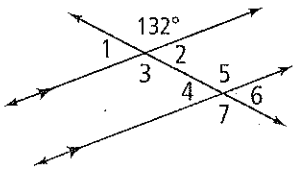
Name _____ Class _____ Date _____

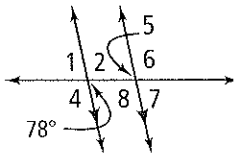
# 3-2 Practice KEY #2 Form G

## Properties of Parallel Lines

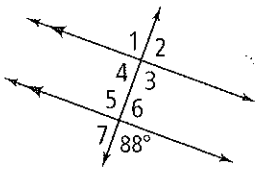
**Identify all the numbered angles that are congruent to the given angle. Justify your answers.**

1. 

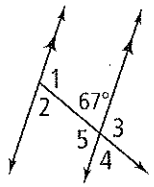
∠3; vert. ∡ are ≅; ∠5; corresp. ∡ are ≅; ∠7; alt. ext. ∡ are ≅.

2. 

∠1; vert. ∡ are ≅; ∠5; alt. int. ∡ are ≅; ∠7; corresp. ∡ are ≅.

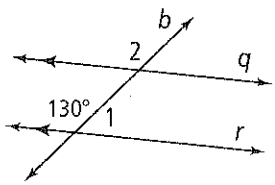
3. 

∠5; vert. ∡ are ≅; ∠3; corresp. ∡ are ≅; ∠1; alt. ext. ∡ are ≅.

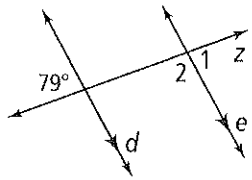
4. 

∠4; vert. ∡ are ≅; ∠2; alt. int. ∡ are ≅.

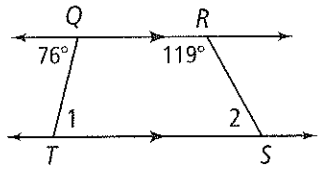
**Find $m\angle 1$ and $m\angle 2$. Justify each answer.**

5. 

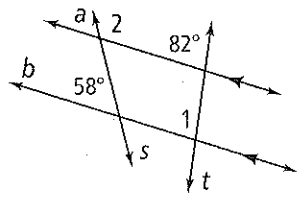
$m\angle 1 = 50$; ∡ that form a linear pair are suppl.; $m\angle 2 = 130$; corresp. ∡ are ≅.

6. 

$m\angle 1 = 79$; alt. ext. ∡ are ≅; $m\angle 2 = 101$; ∡ that form a linear pair are suppl.

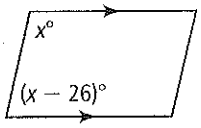
7. 

$m\angle 1 = 76$; alt. int. ∡ are ≅; $m\angle 2 = 61$; same-side int. ∡ are suppl.

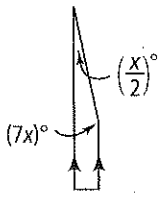
8. 

$m\angle 1 = 82$; corresp. ∡ are ≅; $m\angle 2 = 122$; the 58° ∠ and the ∠ below ∠2 are alt. int. ∡ and are ≅. Because ∠2 and the ∠ below it form a linear pair, they are suppl.

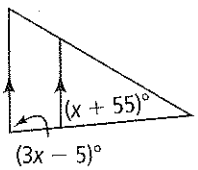
**Algebra Find the value of $x$ and $y$. Then find the measure of each labeled angle.**

9. 

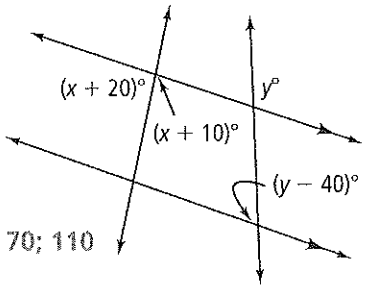
103; 77; 103°

10. 

24; 12; 168

11. 

30; 85; 85

12. 

75; 95; 85; 70; 110

Name _____ Class _____ Date _____

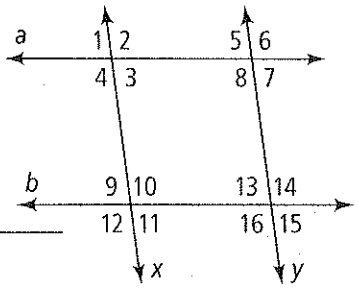
# 3-2 Practice (continued) Form G

## Properties of Parallel Lines

**13.** Write a two-column proof.

**Given:** $a \parallel b$, $x \parallel y$

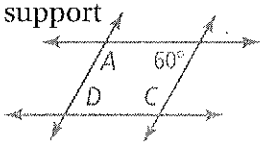
**Prove:** $\angle 4$ is supplementary to $\angle 15$.




Answers may vary. Sample:

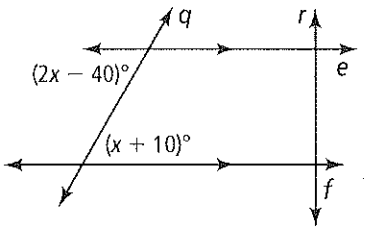
| Statements | Reasons |
|---|---|
| 1) $x \parallel y$; $a \parallel b$ | 1) Given |
| 2) $\angle 15 \cong \angle 9$ | 2) Alt. ext. angles are $\cong$. |
| 3) $m\angle 15 = m\angle 9$ | 3) Definition of congruent |
| 4) $\angle 9$ and $\angle 4$ are suppl. | 4) Same-side int. $\measuredangle$ are suppl. |
| 5) $m\angle 9 + m\angle 4 = 180$ | 5) Def. of suppl. $\measuredangle$ |
| 6) $m\angle 15 + m\angle 4 = 180$ | 6) Substitution property |
| 7) $\angle 15$ and $\angle 4$ are suppl. | 7) Def. of suppl. $\measuredangle$ |

**14. Visualization** One pair of parallel lines intersect a second pair of parallel lines. One of the angles of intersection has a measure of 60. How can you determine the measure of the four interior angles? Draw a sketch to support your answer.




Answers may vary. Sample: If the measure of the given angle is 60, then $m\angle A$ and $m\angle C$ are both 120 because same-side interior angles are supplementary. Because $\angle C$ and $\angle D$ are also supplementary, $m\angle D$ is 60.

**15. Error Analysis** Which solution for the figure at the right is incorrect? Explain.




$2x - 40 = x + 10$

$x - 40 = 10$

$x = 50$

$2x - 40 + (x + 10) = 180$

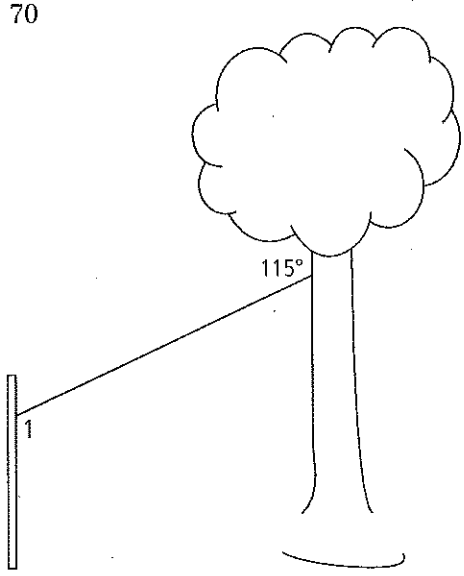
$3x - 30 = 180$

$3x = 210$

$x = 70$

Second solution; the angles are alternate interior angles, which means they are congruent.

**16.** A zip line consists of a pulley attached to a cable that is strung at an angle between two objects. In the zip line at the right, one end of the cable is attached to a tree. The other end is attached to a post parallel to the tree. What is the measure of $\angle 1$? What type of angle pair do $\angle 1$ and the given angle represent?




115°; alternate interior angles

Name _____ Class _____ Date _____

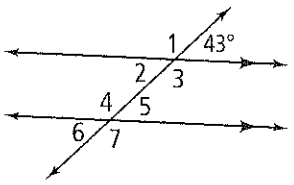
# 3-2 Practice

*Form K*

## Properties of Parallel Lines

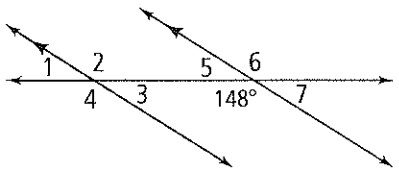
**Identify all the numbered angles that are congruent to the given angle. Justify your answers.**

**1.**



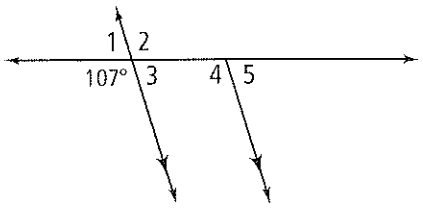

∠2; vert. ∡ are ≅; ∠5; corresp. ∡ are ≅; ∠6, alt. ext. ∡ are ≅.

**2.**



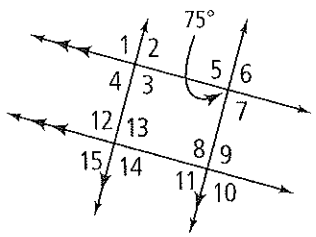

∠6; vert. ∡ are ≅; ∠4; corresp. ∡ are ≅; ∠2; alt. int. ∡ are ≅.

**3.**




∠2; vert. ∡ are ≅; ∠4; corresp. ∡ are ≅.

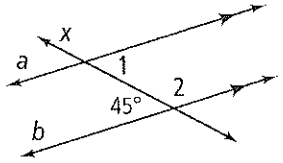
**4.**




∠6; vert. ∡ are ≅; ∠4 and ∠11; corresp. ∡ are ≅; ∠2 and ∠9; alt. int. ∡ are ≅; ∠13; corresp. ∡ of alt. int. ∡ are ≅; ∠15; corresp. ∡ of corresp. ∡ are ≅.

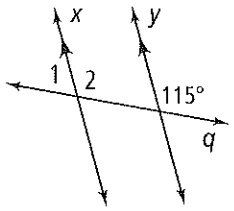
**Find $m\angle 1$ and $m\angle 2$. Justify each answer.**

**5.**



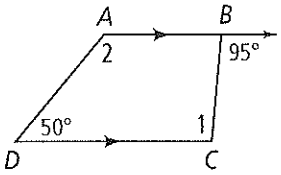

45; alt int. ∡ with 45°; 135; linear pair with 45°

**6.**



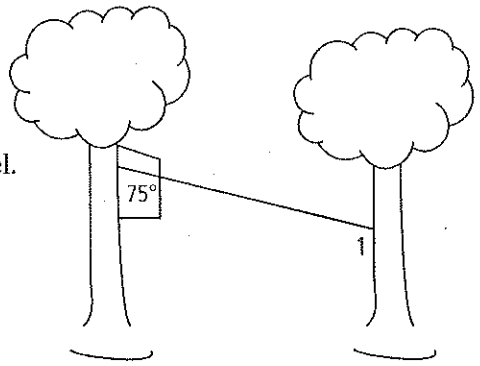

65; linear pair with ∠2; 115; corr ∡ with 115°

**7.**




95; alt int. ∡ with 95°; 130; same-side ∡ with 50°

**8.** Ana made a zip line for her tree house. To do this, she attached a pulley to a cable. She then strung the cable at an angle between the tree house and another tree. She made the drawing of the zip line at the right. The two trees are parallel.




**a.** What is the measure of ∠1?

105

**b.** Are ∠1 and the given angle *same-side interior angles, alternate interior angles,* or *corresponding angles?*

same-side interior angles

Name _____ Class _____ Date _____

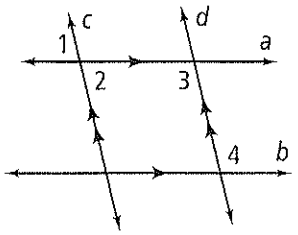
# 3-2 Practice (continued) Form K

## Properties of Parallel Lines

**9. Developing Proof** Supply the missing reasons in the two-column proof.

**Given:** $a \parallel b$, $c \parallel d$

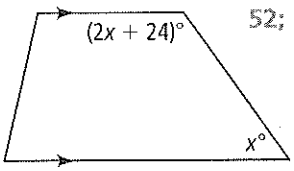
**Prove:** $\angle 1$ and $\angle 4$ are supplementary.



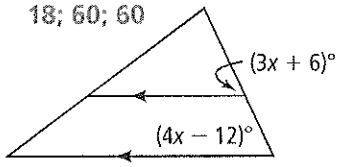

| Statements | Reasons |
|---|---|
| 1) $\angle 1 \cong \angle 2$ | 1) ? Vert. $\measuredangle$ are $\cong$. |
| 2) $c \parallel d$ | 2) Given |
| 3) $\angle 2$ and $\angle 3$ are supplementary. | 3) ? If lines are $\parallel$, then same-side int. $\measuredangle$ are suppl. |
| 4) $a \parallel b$ | 4) Given |
| 5) $\angle 3 \cong \angle 4$ | 5) ? If lines are $\parallel$, then alt. int. $\measuredangle$ are $\cong$. |
| 6) $\angle 1$ and $\angle 4$ are supplementary. | 6) ? Subst. Prop. |

**Algebra Find the value of $x$. Then find the measure of each labeled angle.**

**10.** 52; 128; 52

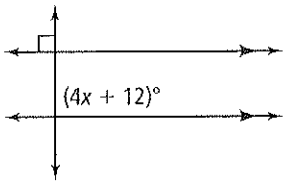



**11.** 18; 60; 60

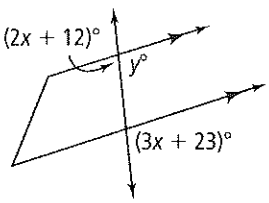



**Algebra Find the values of the variables.**

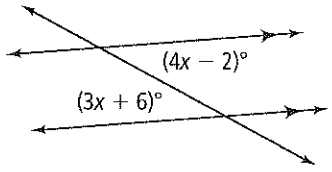
**12.** 19.5




**13.** 29; 110




**14. Error Analysis** Which solution for the value of $x$ in the figure at the right is incorrect? Explain.




**A.**

$4x - 2 = 3x + 6$

$x = 8$

**B.**

$4x - 2 + 3x - 6 = 180$

$7x - 8 = 180$

$x = 24.6$

B; the marked angles are alt. int. $\measuredangle$, so they are $\cong$.